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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,712

06/03/2005

Takeshi Yokoyama

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EXAMINER

LEGESSE, HENOK D

ART UNIT

PAPER NUMBER

2861

MAIL DATE

DELIVERY MODE

08/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/537,712

Applicant(s)

YOKOYAMA ET AL.

Examiner

Henok Legesse

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 1-5, 13, 15-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-9, 11-14, & 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 4, 5, 10, 15 and 16 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 06/03/2005 & 10/19/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of species I, sub-species A, and second sub-species iii in the replay filed on 07/26/2007 is acknowledged. The traversal is on the ground(s) that the claimed inventions are directed to a single inventive concept, unity of invention. This is not found persuasive because there are at least two inventive concepts claimed directed different species. The first inventive concept is generally directed to reducing the energy of ultraviolet ray reflected from irradiation device to wards the nozzles/nozzle surface of a recording head by providing ultraviolet ray absorbing surface in the irradiation device. The second inventive concept is generally directed to suppressing the ultraviolet ray reflected from irradiation device to wards the nozzles/nozzle surface of a recording head by providing partitioning members inside the irradiation device to decrease the incident and reflection angle of the ultraviolet rays.

The requirement is still deemed proper and is therefore made final.

2. Claims 4, 5, 10, 15, 16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a non elected species.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3,6,7,9,11-14,17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mills et al (US 2003/0035037).

Regarding claim 1, Mills et al teaches an inkjet printer (fig.18B) comprising:

a recording head (1010-1 – 1010-4, fig.18B) provided with a nozzle (inkjet heads inherently has nozzles) to jet ink which is cured by radiation of an ultraviolet ray (paragraph0080); and

an ultraviolet ray irradiation device (2006, 2008) provided with an ultraviolet ray light source (1012) to generate the ultraviolet ray to cure the ink,

wherein the ink is cured by radiating the ultraviolet ray to a recording medium (32, see fig.18A) with the ultraviolet ray irradiation device (2006, 2008, fig.18B) after making the ink jetted from the nozzle land on the recording medium (32, see fig.18A) to form an image, the ultraviolet ray irradiation device (2006, 2008, fig.18B) comprises a cover member (lamp housing 1014, see fig.14B. Note that, lens 1016 is attached to

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inner surface of 1014) to cover the ultraviolet ray light source (1012, fig.14B, 18B), and an ultraviolet ray reflectance of a surface which is in the cover member (1014, fig.14B) and reflects the ultraviolet ray radiated from the ultraviolet ray light source (1012) to the recording head (1010-1 – 1010-4, fig.18B) is made to be lower than an ultraviolet ray reflectance of the other surface (lens 1016) (See figs.14B and 18B; only the inner surface of housing 1014 which is opposite to the recording substrate 32 is covered with a lens 1016 which inherently has a very high ultraviolet ray reflectance. It would be obvious to one having ordinary skill in the art to realize that the ultraviolet ray reflectance of the surfaces perpendicular to the substrate 32 is lower than the ultraviolet ray reflectance of lens 1016 that covered the inner top surface of 1014).

Regarding claim 2, Mills et al further teaches a reflection member (the inner surfaces of the housing 1014 which are perpendicular to substrate 32, figs.14B, 18B) to reflect the ultraviolet ray is provided on an inner surface of a surface of the cover member (housing 1014, fig.14B) which is perpendicular to the recording medium (32) and is in close vicinity to the recording head (1010-1 – 1010-4, fig.18B)(Note that, a housing element such as 1014 is customarily made of materials such as plastic and steel which has inherent property of reflecting radiations such as ultraviolet ray. However the UV ray reflectance of the lens 1016 surface is much higher than that of the two perpendicular surfaces of 1014).

Regarding claim 3, Mills et al further teaches an ultraviolet ray absorbing member (in fig.18B; the inner surfaces of the housing 1014 which are perpendicular to substrate 32 and are distant from heads 1010) to absorb the ultraviolet ray (from 1012) is provided on an inner surface of a surface of the cover member (1014) which is perpendicular to the recording medium (32) and is distant from the recording head (1010-1 – 1010-4) (Note that, the perpendicular inner surface of 1014 are conventionally made of materials such as plastic and steel which are not the best reflection materials unlike lens 1016 material, so it is obvious that a portion of UV light reached to their surface will be absorbed and a portion of the UV light will be reflected).

Regarding claims 6 and 14, Mills et al further teaches a plurality of ultraviolet ray light sources (LEDs 100 in figs.8A, 9A; paragraph 0058) are provided in the ultraviolet ray irradiation device (100-1,100-2,102-1,102-2).

Regarding claims 7 and 17, Mills et al further teaches the claimed invention, wherein the ultraviolet ray light source is an LED, mercury lamp, and xenon flash lamp (paragraphs 0058,0059,0066), but failed to teach wherein the ultraviolet ray light source is a hot-cathode tube.

It would have been an obvious matter of design choice to a hot-cathode tube, since applicant has not disclosed that a hot-cathode tube light sources solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with LED or mercury lamp light sources.

Regarding claims 9 and 19, Mills et al further teaches the recording head (1010-1 – 1010-4, fig.18B) is a serial head system (see fig.1, paragraph 0049; printhead carriage 18 moves back and forth along rail 16. In fig.18B, paragraph 0080; printhead carriage 18d moves back and forth in the direction of A and B shown in fig.18A), and the ultraviolet ray irradiation device (2006,2008) is provided at least on one side of both side portions of the recording head (1010-1 – 1010-4) in a main scanning direction thereof.

Regarding claim 11, Mills et al teaches an inkjet printer (fig.18B) comprising:
a recording head (1010-1 – 1010-4, fig.18B) to jet ink from a jet opening of a nozzle (inkjet heads inherently has nozzles) toward a recording medium (32 of figs.13A, 14B, 18A), the ink being cured by irradiated with an ultraviolet ray (paragraph0080); and
an ultraviolet ray irradiation device (2006, 2008 of fig.18B) to radiate the ultraviolet ray from an ultraviolet ray light source (1012) to the ink jetted on the recording medium (32 of fig.18A),

wherein the ultraviolet ray irradiation device (2006, 2008 of fig.18B) comprises a cover member (lamp housing 1014, see fig.14B. Note that, lens 1016 is attached to inner surface of 1014) to cover the ultraviolet ray light source (1012);

the cover member (1014) is opened toward a recording surface side (see figs.14B, 18B) of the recording medium (32), and comprises an orthogonal surface portion (see figs.14B, 18B; surfaces of the housing 1014 which are orthogonal to substrate 32) approximately perpendicular to the recording surface (32) and an opposite

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surface portion (the surface of the lens 1016 that covered the inner top surface of 1014, figs. 14B, 18B) having a region opposed to at least the recording surface (32); and an ultraviolet ray reflectance of the orthogonal surface portion is made to be lower than an ultraviolet ray reflectance of the opposite surface portion (see figs. 14B, 18B; It is obvious that the surfaces reflectance of the surface of the lens 1016 is inherently much higher than that of the two housing surfaces, which are perpendicular to substrate 32).

Regarding claim 12, Mills et al further teaches a reflection member (lens 1016 in figs. 14B, 18B) to reflect the ultraviolet ray radiated from the ultraviolet ray light source (1012) toward the recording surface of the recording medium (32) is provided on the opposite surface portion (see figs. 14B, 18B).

Regarding claim 13, Mills et al further teaches an ultraviolet ray absorbing member (in figs. 14B, 18B; the inner surfaces of the housing 1014 which are orthogonal to substrate 32) configured to include a material which absorbs the ultraviolet ray radiated from the ultraviolet ray light source (1012) is provided on the orthogonal surface portion (Note that, the orthogonal inner surface of 1014 are conventionally made of steel and plastic materials which are not a perfect reflection elements unlike lens 1016, so it is obvious that a portion of UV light reached to the orthogonal surfaces are absorbed and a portion of the UV light are reflected).

6. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mills et al in view of Laksin et al.(US 6,232,361).

Regarding claims 8 and 18, Mills et al substantially teaches the claimed invention except the ink is a cation curing type ink.

However, Laksin et al teaches ultraviolet curable cationic inks used in inkjet printers (col.1, lines 5-10; col.2, lines 55-58).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use cationic ink in the recording device of Mills et al as taught by Laksin et al the motivation being ultraviolet curable cationic inks are very good adhesion on different plastic and metallized substrates and has enhanced reactivity, reduced viscosity and odor (col.1, lines 11-13; col.2, lines 55-58 of Laksin et al).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Henok Legesse whose telephone number is (571) 270-1615. The examiner can normally be reached on Mon - FRI, 7:30-5:00, ALT.FRI EST.TIME.

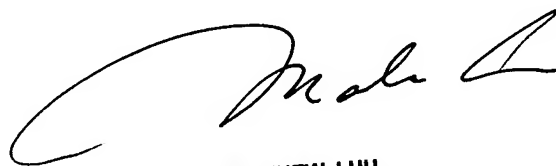
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

H.L.
HL

08/13/2007



MATTHEW LUU
SUPERVISORY PATENT EXAMINER